It is interesting to observe how persistently this Kalmia retains the seed capsules of each season's growth.

If fruiting branches of this little shrub be carefully examined, it will be noted that several clusters of small, closely crowded capsules appear along the stalk, as shown in the accompanying photograph. Each cluster is the growth of a single season, and as the capsules are strongly persistent, clusters several years old may be present. The accompanying illustration shows two stalks with a few capsules still adhering from the growth of the season of 1907, together with clusters of each succeeding year including the present season of 1910. The uppermost cluster of capsules represents the present season's growth, and is of a rich, reddish-brown color, which becomes a dull, faded grey in older clusters longer exposed to weathering influences.

The beautiful, showy rose-red flowers of early summer are closely arranged in whorls of little corymbs in the axils of the persistent, last year's leaves. Later in the season following the appearance of the clustered capsules these subtending leaves are shed and the leafy shoot of the present season surmounts the topmost capsule cluster, as shown in the photograph. These new leaves persist through the winter, and from their axils will appear the flowers and seed-capsules of the next season.

Kalmia angustifolia flourishes in open, damp situations throughout New England. In certain open hilly pastures it becomes especially luxuriant. The rare beauty of its clustered, deep rose-red flowers in early summer together with the green, persistent leaves, the neat, compact, massing habit of growth, and its hardy adaptability should highly recommend this Kalmia to cultivation.

DEPARTMENT OF AGRICULTURE

REVIEWS

The Origin of the Coco Palm*

Having described a new species of *Glaziova*, founded upon a specimen growing in the Botanical Garden at Buitenzorg, but

**Glaziova Treubiana* nouvelle espèce de Cocoïnée, avec observations sur le genre Cocos. Par O. Becarri. Annales du Jardin Botanique de Buitenzorg, 2e Serie, Suppl. III. Pp. 791–806, Plate and text figures. Leide, 1910.

whose native country is unknown, and having recorded some observations on the flowers of *Cocos nucifera*, Dr. Beccari devotes the last half of his paper to a discussion of the disputed question of the original home of the latter palm.

On this point the generally accepted opinion had attributed an Asiatic origin to this palm, a view accepted by De Candolle in his classic "*Origine des plantes cultivées.*" But in 1901, Mr. O. F. Cook, in a paper published in the seventh volume of the Contributions of the United States National Herbarium, put forth a well supported argument in favor of "the alkaline regions of the Andes of Colombia,—in valleys remote from the sea," as the cradle of the cocoanut. From both these views Dr. Beccari dissents.

He calls attention to the fact that, in determining the place of origin of a plant or an animal, we must consider not alone the present configuration of the earth's surface, but we must go back at least to the tertiary period, when the ancestors of the organic forms of today were assuming their development (*s'etre effectuée la plasmation*). It is evident that during that period great geographical changes were effected in the Pacific basin in connection with the elevation of the Andes.

The weightiest argument in favor of the American origin of the Coco Palm is drawn from the fact that, with the exception of the African oil palm, *Elaeis guineensis*, all the other members of the tribe are indisputably American. But none of them are, Dr. Beccari claims, truly related to *Cocos nucifera*, which is strictly monotypic, as it is also regarded by Mr. Cook. Moreover, all these relatives, more or less remote, inhabit regions on the eastern side of the Cordilleras, which immense barrier separates them from the present actual center of distribution of the Coco Palm.

The author names several other palms whose presence in America is best accounted for on the hypothesis of the existence, in a former geological age, of a more extensive land area in the Pacific, than now remains.

While the Coco Palm may, under favorable circumstances, live at places distant from the sea, essentially it is a plant of

maritime shores. That it does not occur on some shores where it might naturally be expected is attributed to enemies, among whom, it may be, even primitive man is to be counted. It cannot succeed in forests because it is unable to compete with other trees, and it is there without means of dissemination, for its nuts fall directly at the foot of the tree without any chance of being carried to a distance. On the seashore, favored by its tolerance of salt water, it encounters little competition, and the ocean currents bear its nuts afar.

A further argument is drawn from the singular association existing between the Coco Palm and the Robber Crab. This great crustacean, *Birgus latro*, a foot and a half in length, and terrestrial in habit, can exist only where the cocoanut flourishes, and is found only in the Asiatic and Pacific islands. Like its relative, the Hermit Crab, its soft body is unprovided with a protective covering, and to supply this want the *Birgus* encases its abdomen in the empty shell of a cocoanut, to the cavity of which its dimensions exactly correspond. Even that it climbs to the tops of the palms for the purpose of detaching the nuts, long regarded as a fable, has been recently ascertained to be a fact. Its buccinal claw has developed into a ponderous hammer, wherewith it staves in the germinal end of the cocoanut and extracts, bit by bit, the nourishing meat. To this rich food it is due that its abdomen is a reservoir of oil.

These modifications, so extraordinary both in habits and in organs, and found in the *Birgus* alone, of all the crab family, could have been acquired by association with no other plant than the Coco Palm, and to account for their acquisition demands an immense period of time. And since Polynesia is the native home of *Birgus latro*, it is logical to conclude that it is likewise that of *Cocos nucifera*.

The author, therefore, believes that the Coco Palm acquired its specific form in Polynesia, and that its distribution therein was effected by the ocean currents, whose efficiency for that purpose is so vigorously combated by Mr. Cook. In Asia and in Malasia it has only gained a foothold under the protection of man.

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